

Lead Use in Electronics

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About ITI

- ITI's Environmental Leadership Council represents over 65 leading high-tech and electronics manufacturers:
 - Information technology
 - Wireless devices
 - Consumer electronics
 - Semiconductors and components
 - Telecommunications systems
 - Medical devices



Lead in Electronics

Presence & Uses

- Lead and other substances are present in some electronics products because they provide unique safety, performance and energy efficiency benefits
 - Safety, e.g., lead shielding in CRTs
 - Performance, e.g., tin/lead connectors
 - Energy efficiency, e.g., solders for flat fluorescent lamps



Lead in Electronics

Are electronics "children's products"?

- Children's Product consumer product designed or intended primarily for children 12 years of age or younger (CPSIA)
- Most "general use" electronic devices are not primarily designed or intended for children



Lead in Electronics

Are electronics "children's products"?

- Categories of electronics
 - Servers; medical devices; testing, monitoring and control; business IT
 - Computers, cell phones, televisions
 - Gaming devices
 - Educational/Instructional devices
 - Toys



Existing Regulations

- EU RoHS Directive: Restriction of the use of certain Hazardous Substances in electronics
 - Restricts four metals and two classes of BFRs
 - Covers tens of thousands of products
 - Industry has worked since before 2002 to develop alternatives for lead
- California, China and Korea "RoHS" Information Technology Industry Council Leading Policy for the Innovation Economy

- Lead at 1,000 ppm at homogeneous material level (maximum concentration value)
- 26 exemptions for lead use in electronics "where technically and scientifically impracticable" to remove
 - Most exempted uses will not be in "children's product"
 - Most exempted uses will be inaccessible (more on accessibility later)



 Best list of RoHS exemptions with explanations: UK Department for Business Enterprise and Regulatory Reform (UK BERR) RoHS Government Guidance Notes

http://www.rohs.gov.uk/Docs/Links/RoHS %20Regs%20Guidance%20-%201%20July%202008.pdf



- Some exempted uses that <u>may</u> be found in children's products:
 - 5) Lead in CRT glass
 - 6) Lead as alloying element
 - 13) Lead in pin connectors
 - 15) Lead in optical glass
 - 17) Lead in integrated circuit flip chip packages
 - 22) Lead as bonding agent for LCDs



- Most exempted uses of lead in electronics will be internal to the device
- Within most parts the lead is also inaccessible
 - Lead in CRT or optical glass
 - Lead in Flip Chips
- Only exempted use that may be accessible in some uses is #6 – lead as an alloying element



Feasibility of Lead Limits

- RoHS Compliance efforts include:
 - New materials development
 - Enhanced supply-chain management
 - Revised product design (requires testing for functionality and long-term reliability)
 - Auditable quality and environmental management systems
- Studies estimate industry has spent 20-35 billion dollars for RoHS compliance



Feasibility of Lead Levels

- According to the EU Commission, lead level set at 1,000 ppm because:
 - "a total avoidance (of lead) is impossible to achieve"
 - that level was considered to "ensure a high level of protection."
- It is important to note that this 1,000 ppm limit is at the homogeneous material level rather than the part level
 - Means that industry is meeting a lower threshold at the part level

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Conclusions

- Most electronics are not "children's products"
- Industry has spent significant resources minimizing or eliminating the use of lead in electronics
- Most remaining lead use in electronics is covered by RoHS exemptions
- Most exempted uses are not accessible



Recommendations

- Set initial lead limit at 1,000 ppm at part level and investigating if lower level is possible
- CPSC should develop an exemption process for specific uses of lead, relying on EU RoHS exemptions
- CPSC and industry should coordinate to further develop the ASTM F963 standard



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